

1.3.90. FEATURES OF SOFTWARE IMPLEMENTATION OF WIRELESS TECHNOLOGIES FOR ACOUSTIC ANALYSIS INSTRUMENTS

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Lately the instrument-making production has mostly based on the use of computer technologies, that allow to raise arbitrariness and reliability of the conducted control. Nowadays the use of the computer technologies is the most actual for solving the problems of acoustical analysis [1].

The main factor of choosing the circuit decisions is the creating a wireless system sensor – computer. In this case one should be guided by the striving for using the free standards of the wireless connection. Another aspect is the prevalence and instrument support of the chosen standard of the wireless connection. Under these circumstances it is possible to attain comparatively low price of the wireless sensor without additional and special computer devices. Thus, it makes the solution more preferable for the wide range of users.

Some programmes of data exchange exclusively use Windows API and there is a platform and programme dependence of the gadgets, which in one's turn makes some difficulties of elaboration scaling control facilities by the means of common programming.

In this work the authors pay attention to the possibility of the hardware implementation based on technical module of Bluetooth (WARP THOR 2022) and ADC that allow to choose the digitizing speed of the receiving acoustic signal from 125 to 5000 samples per second. However, it's realization, based on the technical module, does not allow to use standard services and clip board directly.

The technology of National Instruments gives wider possibilities for making the programme parts of acoustic analysis instruments, providing both platform independence and less complicated means of telecommunication. The applications of LabVIEW can be used for displaying the receiving data [2]. The variants of the basic virtual instrument (VI) can be made on the basis of the standard application programme interface (API) – VISA (for WARP THOR 2022), that does not depend on the protocol and bus of computer. The instrument works by means of virtual COM-port with the Bluetooth adapter installed on the computer. Another possibility of receiving VI and displaying acoustic signals is the direct cooperation Bluetooth with the functions of LabVIEW such as Bluetooth Discover



Bluetooth Reader



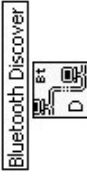
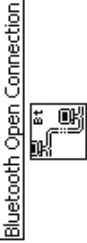
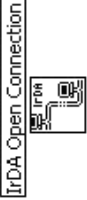
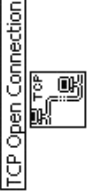
Bluetooth Write



In this case there is a possibility to exchange the receiving information with the varieties of Bluetooth devices in the server or client rate.

VI of the National Instruments functional structure of receiving and displaying signals of both wired and wireless technologies has practically the same structure (tab. 1). The important functional difference is the method of transforming the receiving data. Of necessity, this circumstance allows to scale VI and modify the virtual instruments to other wireless connection standards (eg. Wi-Fi or Zigbee) expected in the near future.

Table 1. Functions LabVIEW of construction VI

	VISA	Bluetooth	IrDA	TCP
Discover	—			—
Open and Connection				
Read				
Write				
Listener	—			
Wait on Listener	—			
Close Connection				

Thus, the Bluetooth wireless connection standard together with the National Instruments VI technology let us solve the problems of the distributed control-measuring systems of the acoustic control and make a wide line of the control instruments for the mass use in different acoustic control instruments by creating more number of configurations of measuring systems and telecommunications.

References:

1. **Потапов А.И., Потапов И.А., Махов В.Е.** Аппаратно- программные средства для телемедицины // Технологии и компоненты. – № 1. – 2007. – С. 164 – 166.
2. **Trevis J., Kring J.** LabVIEW for Everyone: Grapical Programming MadeEasy and Fun. Third Edition. 2007 Pearson Education Inc.